

Industry Trends: Renewable Chemical & New Products from Existing Ethanol Platforms

Nebraska Ethanol
Forum

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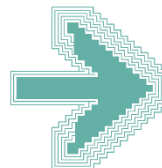
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Your partner in ethanol
plant performance

FLUID-QUIP
Process Technologies



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FQPT Technologies

**GREENFIELD
PLANT**
2017



MSC™
2009

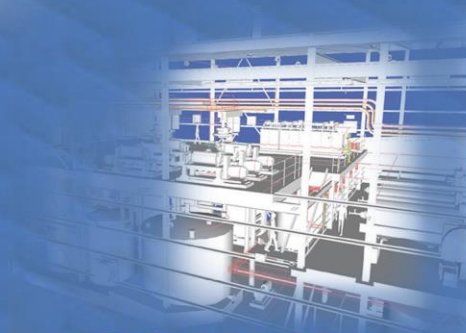
CST™
2016

SGT™
2010



TSC™
2011

BOS™
2011



FBP™
2014

MSC MAX™
2017



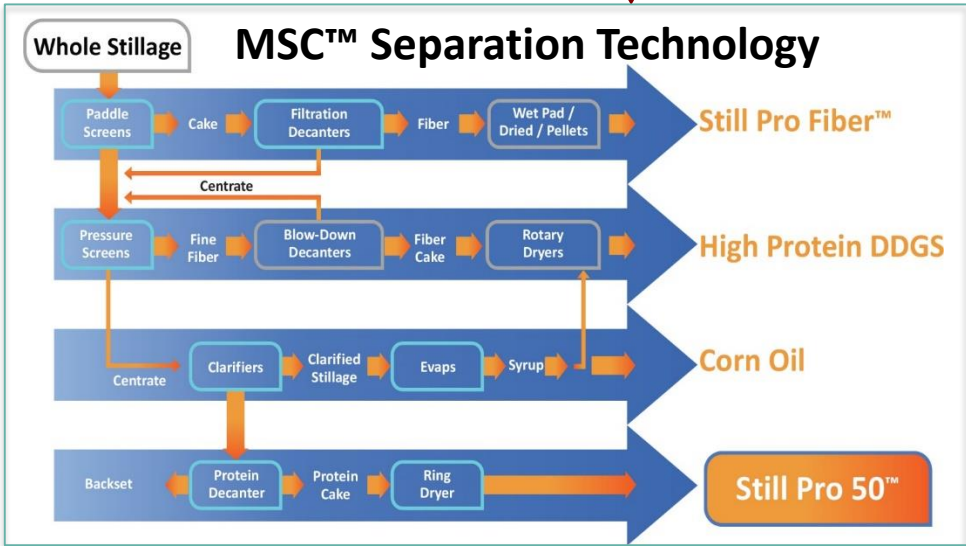
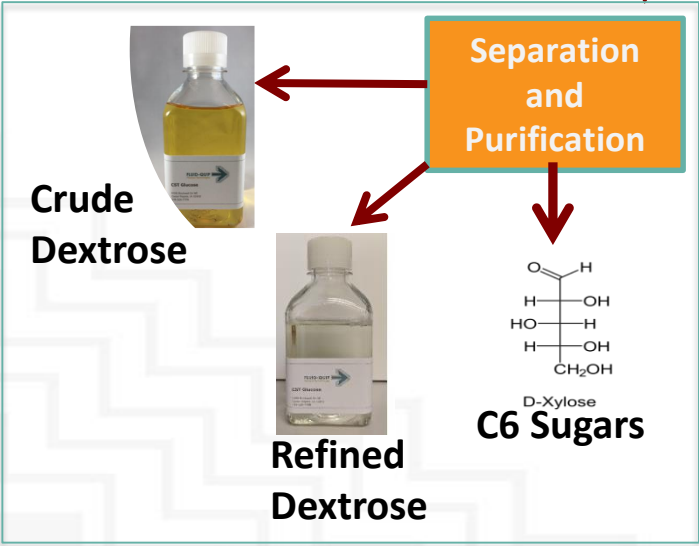
FLEX PLANT™
2015

Diversification Platform – FQPT Technologies

Typical ethanol process



Clean Sugar Technology™



Diversification through Renewable chemicals

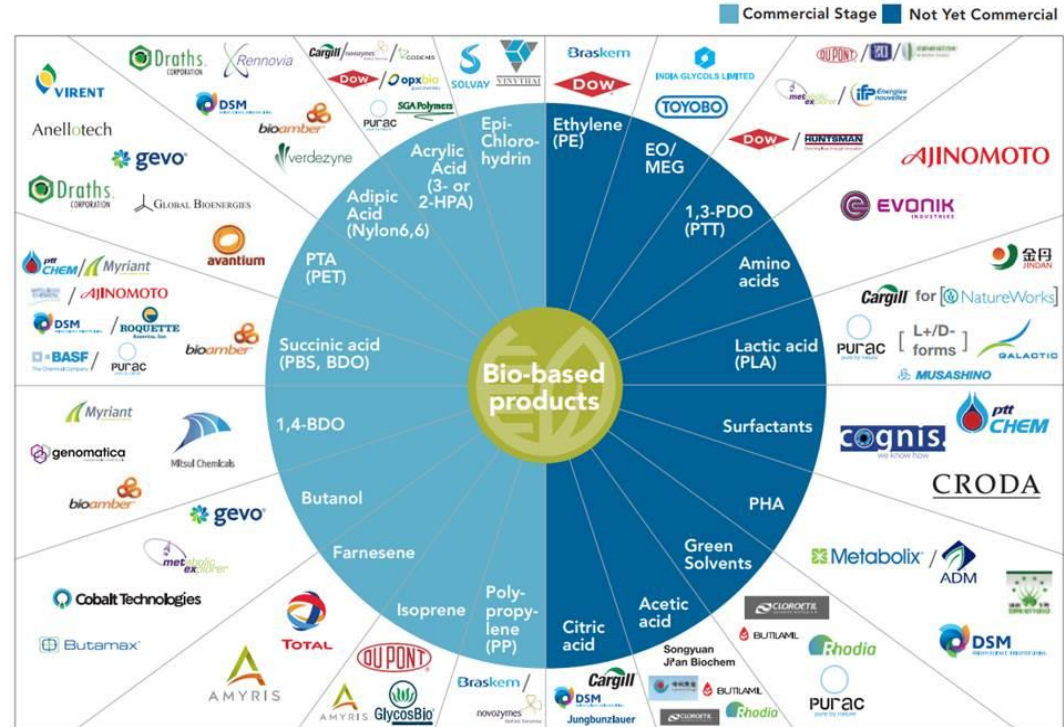
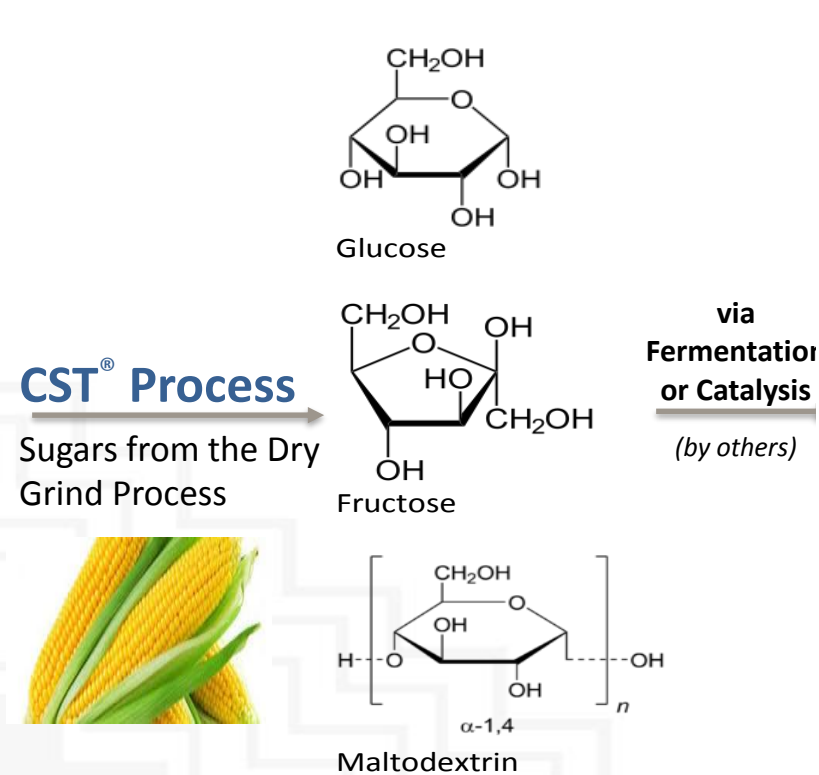


Figure 1: The Emerging Biorenewable Chemical Industry circa 2013.
Source: ICIS

Clean sugar from an dry grind plant today



Installed First Full Scale **Clean Sugar Technology™**

Central Minnesota Renewables

Little Falls, MN Plant



- 25,000 bu/day (635 MT/day) Corn Capacity
- Start-Up: Aug 2016
- Generates aqueous clean glucose stream in a traditional dry grind process, which is fed directly to downstream Biochemical process

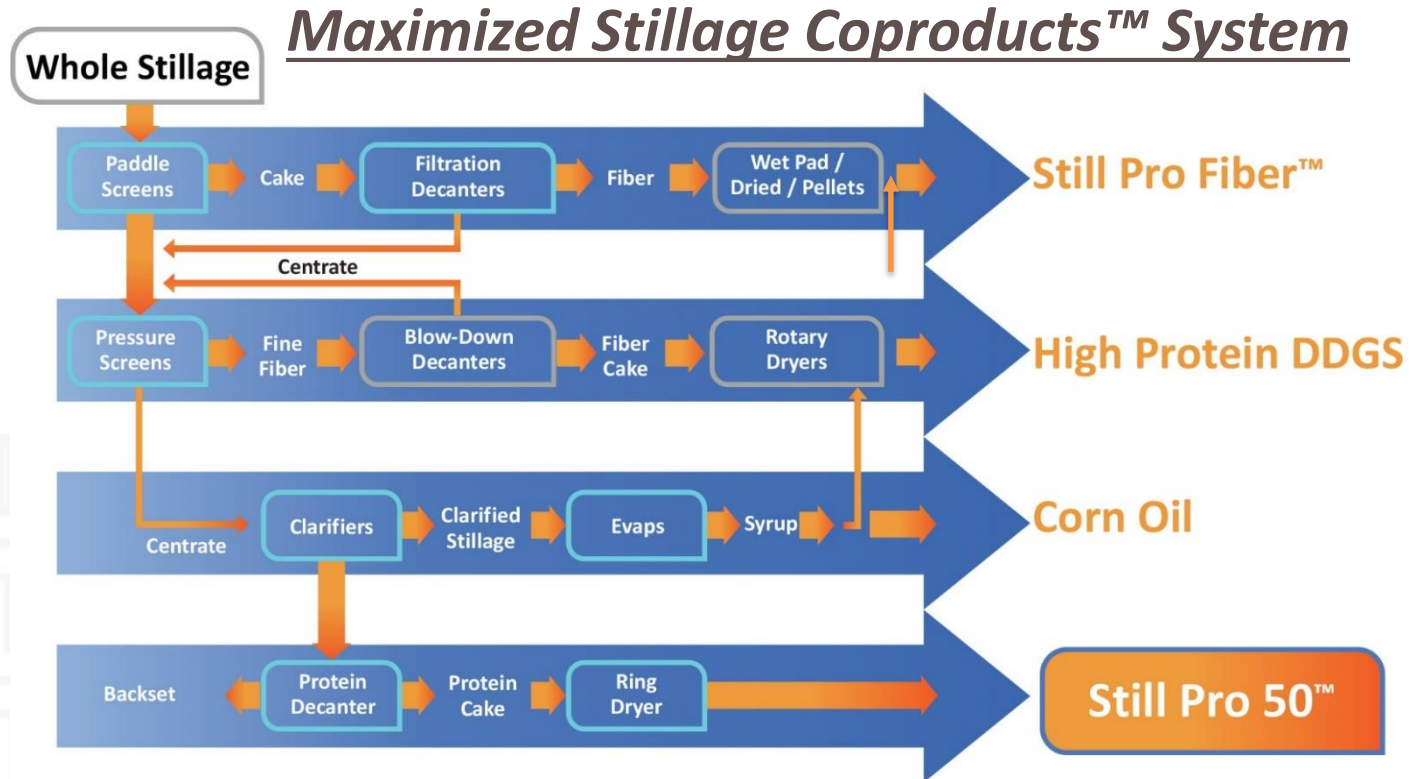
FQPT does not make the chemical, we make the chemical at a lower cost, through the FQPT Clean Sugar Technology

Diversifying through protein

The best opportunity for ethanol plants to is diversify revenue through new co-products...high protein and other differentiated products

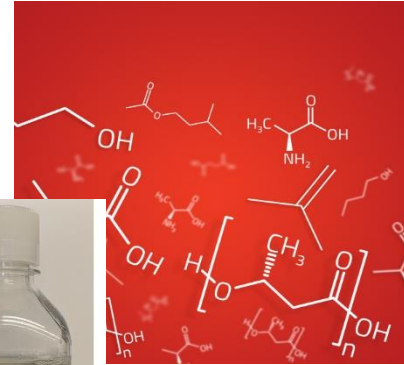
- Protein Co-Products are Marketed Driven Revenue NOT Legislated Revenue
- Staggering increase in world demand for high-value proteins tied to the global increase in animal meat consumption – global protein demand 10 - 20MMT/yr
- Protein market 2015 value = **\$7.7B**, growing to **\$10.1B** in 2020
- Endless market opportunity not tied to ethanol or corn/DDGS
- Move away from energy based markets to a more discipline protein market

Product diversification pathway – protein and fiber



Diversification – do nothing is NOT an option

- What is it
- Why is it important
- What is the right strategy
- How to effectively



Why FQPT?

Fluid Quip Process Technologies was founded on extensive experience and knowhow within the corn wet milling and ethanol production industries. FQPT's engineering and technical leadership team has been developing new technologies and process solutions applicable to the biofuels and biochemical industries for more than 25 years.

Let's get started

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